

INTEX-A flight 3- July 1, 2004

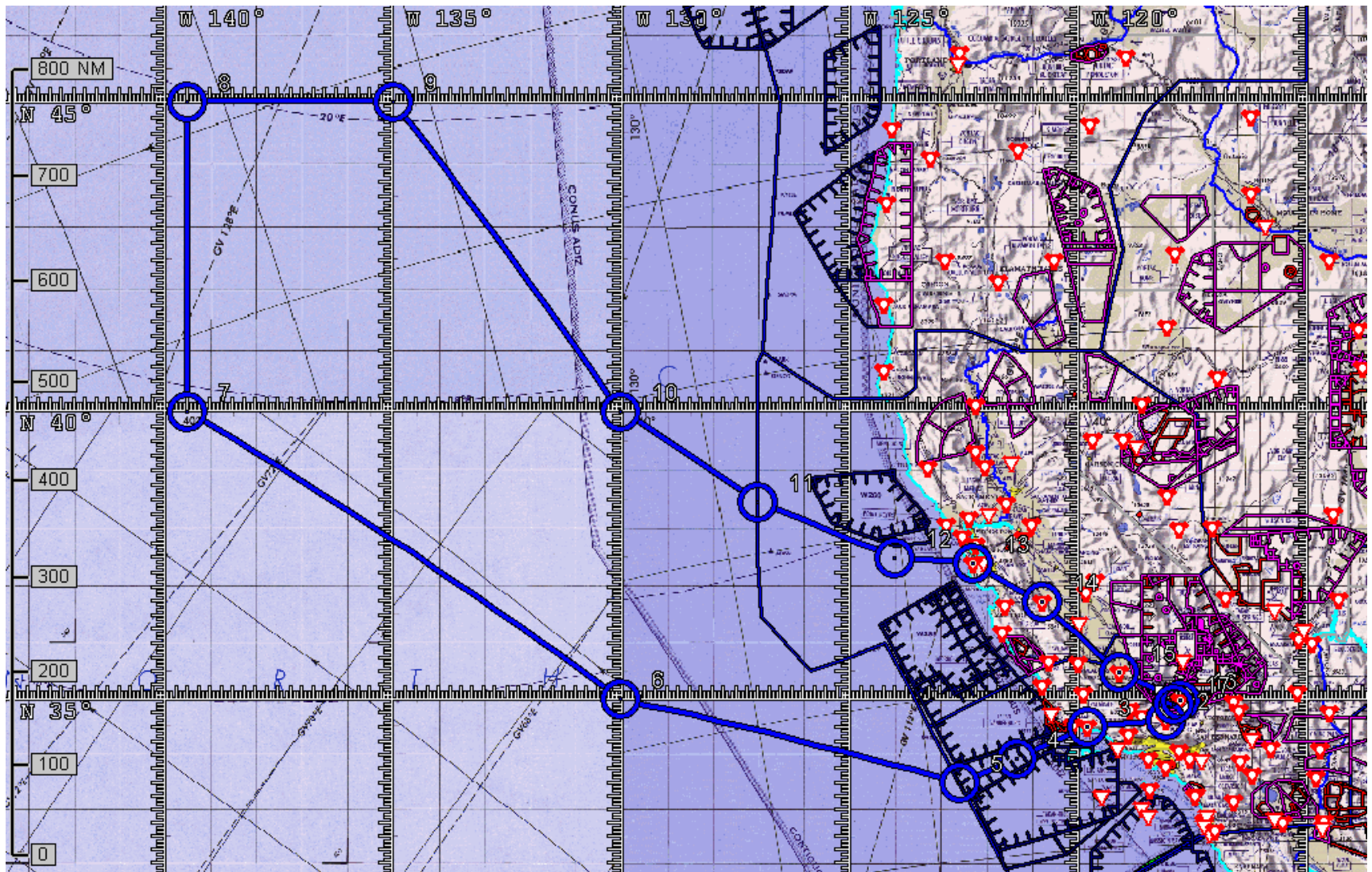
This was the first INTEX-A science flight focused on achieving several INTEX-A mission objectives. Salient among these were AIRS (also MODIS) validation, characterization of low-level California and high level Asian outflow, background and inflow characterization, and stratospheric incursions. The flight was guided by forecasts from multiple ICARTT models along with meteorological analysis and just in time input from GOES satellite. Total flight duration was 8.7 hours with a nominal 8:30 am takeoff. Basic flight patterns and there location are shown in the slides below although these were greatly modified during the flight.

Flow patterns over the flight area were dominated by a subtropical anticyclone over the central Pacific Ocean and a weak low pressure area just southwest of California . This low was closed in the lower levels but weakened to a trough in the middle troposphere. This combination of systems produced a narrow region of California outflow from San Francisco to Vandenberg between about 925 and 850 mb. Farther offshore the low level flow mostly was northerly south of 37° N and westerly to the north. Low-level clouds (~2,000 ft bases) were widespread over much of the flight area. Middle and upper level clouds were confined to parts of the northern flight track.

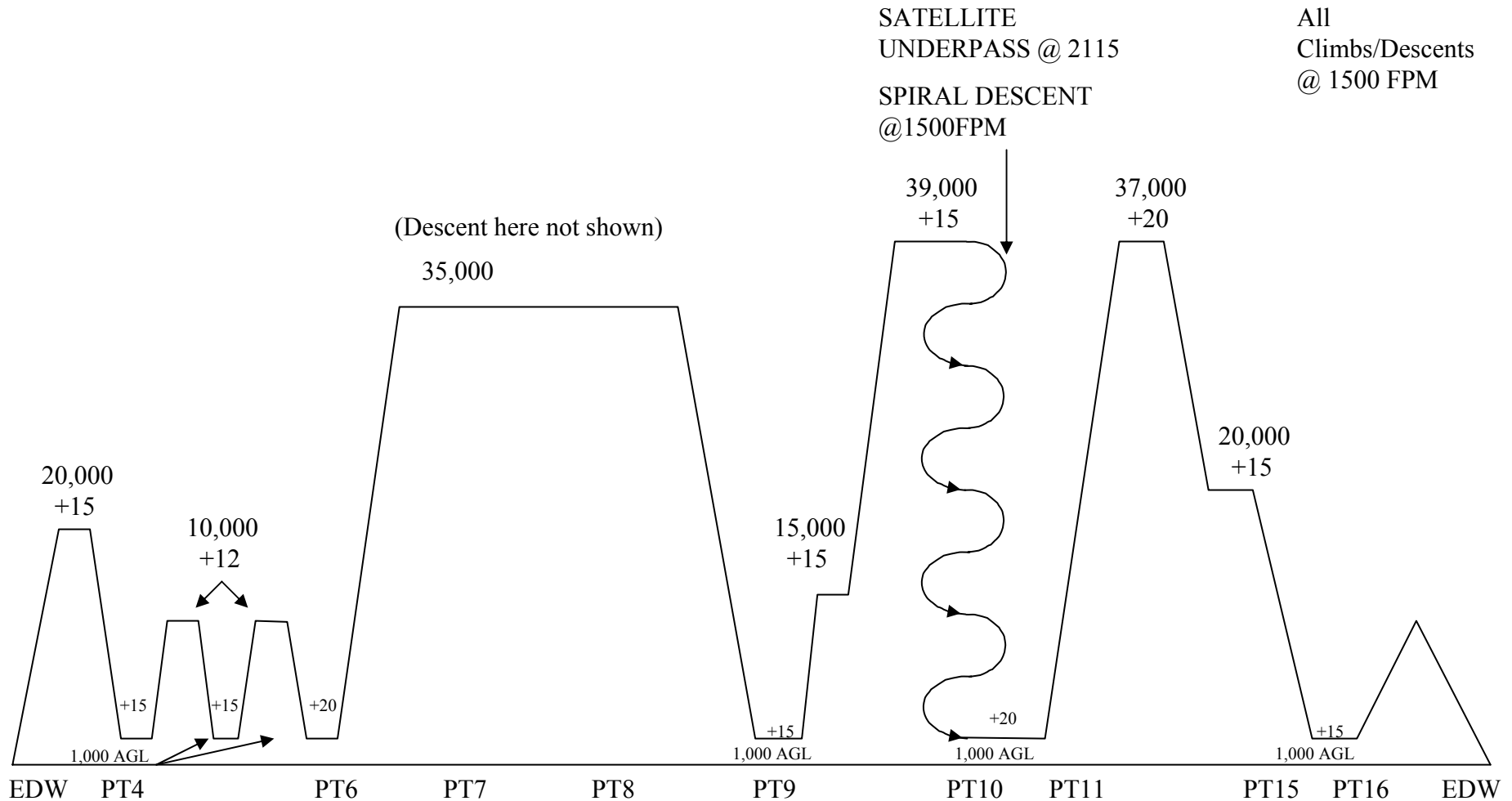
We flew west to the Pacific coast to intercept low level pollution outflow from California. The winds had shifted to northerly direction and this feature although intercepted was very weak. Embedded in pollution layers was highly aged Asian pollution subsiding in the area. A major Asia outflow event was intercepted in several layers between 20-32000 ft around 40-45N. The model predictions for this outflow event were excellent and we penetrated these plumes with ease. The outflow structure was complex with dust layers below and pollution layers above. Ozone was elevated by up to 70 ppb within these plumes (25-30000 ft). After this plume characterization we headed for the rendezvous point for AQUA under-flight. We spiraled down from 37000 to 1000 ft under the nadir point of the AIRS instrument, coincident with the satellite overpass, in a relatively small region of virtually no clouds within the vertical column. We believe these data would be very useful for the validation of both AIRS and MODIS instruments. Extensive profiling was conducted within the troposphere for general characterization of Pacific air. An in progress climb to 35000 ft and descent from this level encountered stratospheric layers with O3 levels exceeding 350 ppb. Subsequently we descended into the Central valley for boundary layer pollution characterization and returned home. The DC-8 operated normally with no thermal problems. All instruments (except GT-LIF and NCAR-TDL) operated normally. Overall, this was a highly successful flight that accomplished all of the planned science objectives and encountered interesting new phenomenon.

The navigational data is available on anonymous ftp site: <ftp2.dfrc.nasa.gov> (directory incoming/icats)

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TYPE ACFT DC-8		CALL SIGN NASA817	DATE	FROM EDWARDS AFB N 34 54.3 W117 53.0		TO EDWARDS AFB N 34 54.3 W117 53.0		PLND TO 15:28		ACT TO		PILOT		COPILOT			
TOT DIST 2732.2		TOT TIME 08+09		FUEL REQ 83714										NAVIGATOR		ENGINEER	
TP DTD#	Fix/Point Description	FREQ	Latitude Longitude	Alt Wind	TAS GS	TC MC	LEG DIST DIST REM	LEG TIME TIME REM	ETA	RETA	ATA	REMARKS					
1	KEDW/A EDWARDS AFB		N 34 54.3 W117 53.0	2302M		058 044	5.0 2727	00+05 08+04	15:28								
2	PMD/R PALMDALE	092X 114.50	N 34 37.9 W118 03.8	8143M	N/A N/A	215 201	23.2 2704	00+04 08+00	15:37								
3	RZS/R SAN MARCUS	096X 114.90	N 34 30.6 W119 46.3	20000M	360 360	265 251	84.9 2619	00+14 07+45	15:51								
4	RZS/R232085	096X 114.90	N 33 55.0 W121 20.0	10000M	N/A N/A	245 231	85.5 2534	00+14 07+31	16:06								
5	DINTY/W RZS/R233153	096X 114.90	N 33 29.0 W122 35.0	10000M	360 360	247 233	67.8 2466	00+11 07+20	16:17								
6	.PT 06		N 35 00.0 W130 00.0	10000M	360 360	284 269	379.8 2086	01+03 06+16	17:20								
7	.PT 07		N 40 00.0 W139 30.0	10000M	360 360	304 288	543.1 1543	01+31 04+46	18:51								
8	.PT 08		N 45 00.0 W139 30.0	10000M	360 360	360 343	299.9 1243	00+50 03+56	19:41								
9	.PT 09		N 45 00.0 W135 00.0	10000M	360 360	090 072	191.6 1051	00+32 03+24	20:13								
10	.PT 10		N 40 00.0 W130 00.0	10000M	360 360	144 126	372.9 679	01+02 02+22	21:15			SAT UNDERPASS					
	.delay		N 40 00.0 W130 00.0	10000M	360 360	144 127	0.0 679	00+25 01+57	21:40								
11	DACEM/W DACEM		N 38 28.0 W127 00.0	10000M	360 360	123 107	167.4 511	00+28 01+29	22:08								

Continued

TP DTD#	Fix/Point Description	FREQ	Latitude Longitude	Alt Wind	TAS GS	TC MC	LEG DIST DIST REM	LEG TIME TIME REM	ETA	RETA	ATA	REMARKS
12	KO45C/W KO45C		N 37 30.0 W124 00.0	10000M	360 360	112 097	153.6 358	00+26 01+03	22:34			
13	OSI/R WOODSIDE	086X 113.90	N 37 23.5 W122 16.9	10000M	360 360	094 079	82.4 275	00+14 +49	22:47			
14	PXN/R PANOCHE	073X 112.60	N 36 42.9 W120 46.7	10000M	360 360	119 105	82.8 192	00+14 +36	23:01			
15	EHF/R SHAFTER	101X 115.40	N 35 29.1 W119 05.8	10000M	360 360	132 118	110.1 82	00+18 +17	23:19			
16	EDW/R EDWARDS	111X 116.40	N 34 58.9 W117 44.0	10000M	360 360	114 100	73.5 9	00+12 +05	23:32			
17	KEDW/A EDWARDS AFB		N 34 54.3 W117 53.0	2302M		238 225	8.8 0	00+05 +00	23:37			

Plan for flight #3: Dryden sortie
last updated 6/30/04 16Z

Objectives:

- (1) Low-altitude California outflow
- (2) Asian plume
- (3) Subsidence and Pacific background
- (4) Stratospheric downwelling
- (5) AIRS validation

